

WHAT IS CLAIMED IS:

1 1. A method for dynamic latency management in a real-time electronic communication
2 comprising:

3 measuring a communication delay arising from a receiving data buffer;

4 determining a latency adjustment necessary to adjust the size of the communication
5 delay to within a predetermined range;

6 determining an optimal range for a size of the communication delay based on the
7 measured communication delay; and

8 modifying a number of samples of a playback data block passing through the
9 receiving data buffer based on the measured communication delay and on the optimal range
10 for the size of the communication delay.

1 2. The method of claim 1 wherein the number of samples is modified without
2 introducing audible artifacts.

1 3. The method of claim 1 wherein measuring the communication delay comprises
2 measuring an instantaneous communication delay associated with the receiving data buffer.

1 4. The method of claim 3 wherein measuring the communication delay comprises:
2 measuring the instantaneous communication delay associated with the receiving data
3 buffer two or more times; and
4 averaging the measurements.

1 5. The method of claim 1 wherein the real-time electronic communication includes an
2 audio communication.

1 6. The method of claim 1 further comprising determining receiving data buffer delay
2 upper and lower bounds.

1 7. The method of claim 1 wherein modifying the number of samples comprises
2 performing heuristic resampling of a playback block.

1 8. The method of claim 7 wherein performing heuristic resampling comprises:
2 analyzing multiple consecutive samples of audio data in the playback block;
3 identifying consecutive samples with minimal variation in a parameter of their data;
4 and
5 adjusting the number of samples in the identified consecutive samples.

1 9. The method of claim 8 wherein adjusting the number of samples comprises removing
2 a sample from the identified consecutive samples.

1 10. The method of claim 8 wherein adjusting the number of samples comprises adding a
2 sample to the identified consecutive samples.

1 11. A computer program, residing on a computer-readable medium, for dynamically
2 managing latency in a real-time electronic communication, comprising instructions for
3 causing a computer to:
4 measure a communication delay arising from a receiving data buffer;
5 determine a latency adjustment necessary to adjust the size of the communication
6 delay within a predetermined range;
7 determine an optimal range for a size of the communication delay; and
8 modify the number of samples of a playback data block passing through the receiving
9 data buffer.

1 12. The computer program of claim 11 further comprising instructions for causing a
2 computer to modify the number of samples without introducing audible artifacts.

1 13. The computer program of claim 11 wherein instructions for causing a computer to
2 measure a communication delay comprise instructions for causing a computer to measure an
3 instantaneous communication delay associated with the receiving data buffer.

1 14. The computer program of claim 13 wherein instructions for causing a computer to
2 measure the communication delay comprise instructions for causing the computer to:
3 measure the instantaneous communication delay associated with the receiving data
4 buffer two or more times; and
5 average the measurements.

1 15. The computer program of claim 11 wherein the real-time electronic communication
2 includes an audio communication.

1 16. The computer program of claim 11 further comprising instructions for causing a
2 computer to determine receiving data buffer delay upper and lower bounds.

1 17. The computer program of claim 11 wherein instructions for causing a computer to
2 modify the number of samples further comprise instructions for causing a computer to
3 perform heuristic resampling of a playback block.

1 18. The computer program of claim 17 wherein instructions for causing a computer to
2 perform heuristic resampling comprise instructions for causing a computer to:
3 analyze multiple consecutive samples of audio data in the playback block;
4 identify consecutive samples with minimal variation in a parameter of their data; and
5 adjust the number of samples in the identified consecutive samples.

1 19. The computer program of claim 18 wherein adjusting the number of samples
2 comprises removing a sample from the identified consecutive samples.

1 20. The computer program of claim 18 wherein adjusting the number of samples
2 comprises adding a sample to the identified consecutive samples.

4 21. A computer system running programmed processes comprising a process
5 for dynamically managing latency in a real-time electronic communication, which process
6 causes the computer system to:

7 measure a communication delay arising from a receiving data buffer;
8 determine a latency adjustment necessary to adjust the size of the communication
9 delay to within a predetermined range;
10 determine an optimal range for a size of the communication delay based on the
11 measured communication delay; and
12 modify the number of samples in a playback data block passing through the receiving
13 data buffer based on the measured communication delay and based on the optimal range for
14 the size of the communication delay.

1 22. The computer system of claim 21 wherein the number of samples is modified without
2 introducing audible artifacts.

1 23. The computer system of claim 21 wherein measuring the communication delay
2 comprises measuring an instantaneous communication delay associated with the receiving
3 data buffer.

1 24. The computer system of claim 23 wherein measuring the communication delay
2 comprises:
3 measuring the instantaneous communication delay associated with the receiving data
4 buffer two or more times; and
5 averaging the measurements.

1 25. The computer system of claim 21 wherein the real-time electronic communication
2 includes an audio communication.

1 26. The computer system of claim 21 wherein the process for dynamically managing
2 latency further causes the computer system to determine receiving data buffer delay upper
3 and lower bounds.

1 27. The computer system of claim 21 wherein modifying the number of samples
2 comprises performing heuristic resampling of a playback block.

1 28. The computer system of claim 27 wherein performing heuristic resampling
2 comprises:
3 analyzing multiple consecutive samples of audio data in the playback block;
4 identifying consecutive samples with minimal variation in a parameter of their data;
5 and
6 adjusting the number of samples in the identified consecutive samples.

1 29. The computer system of claim 28 wherein adjusting the number of samples comprises
2 removing a sample from the identified consecutive samples.

1 30. The computer system of claim 28 wherein adjusting the number of samples comprises
2 adding a sample to the identified consecutive samples.